

# NSE10 Series Navigation Switch Encoders

## Features/Benefits

- Reduced size 10 mm
- Hollow shaft
- Self clinching terminals
- Positive detent feeling

## Typical Applications

- Audio / Video equipment
- Navigation systems
- Computer peripherals



## Construction

FUNCTION: Incremental signal.

CONTACT ARRANGEMENT: Phase difference output of two signal A and B.

TERMINAL: PC pin.

## Mechanical

NUMBER OF DETENT: 24

DETENT TORQUE:  $5 \pm 3$  mN.m

ROTATIONAL ANGLE: 360° endless.

ROTATIONAL LIFE: 100,000 cycles (1 cycle: 360° CW + 360° CCW).

Number of Pulse	Number of Detent	Detent Torque	Mounting Height	Designation
12	24	5mN.m	7	NSE10DH127
12	24	5mN.m	9	NSE10DH129
12	24	5mN.m	11	NSE10DH1211

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

## Electrical

MAXIMUM VOLTAGE: 5 VDC.

CURRENT DC: 1 mA

DIELECTRIC STRENGTH: 50 VAC.

INSULATION RESISTANCE: 50 MΩ min / 50 VDC.

BOUNCE TIME:  $\leq 5$  ms

## Environmental

OPERATING TEMPERATURE: -5°C to +45°C.

STORAGE TEMPERATURE: -15°C to +65°C.

## Process

SOLDERING PROCESS:

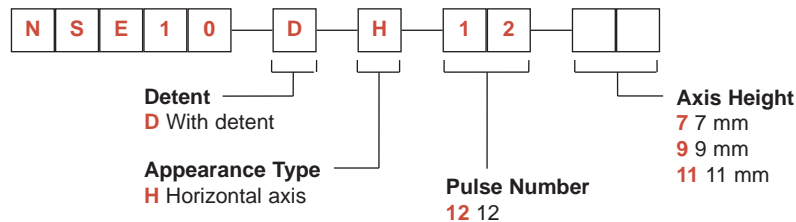
Manual soldering 300°C max., 3s max.

Wave soldering 260°C max., 3s max.

No cleaning.

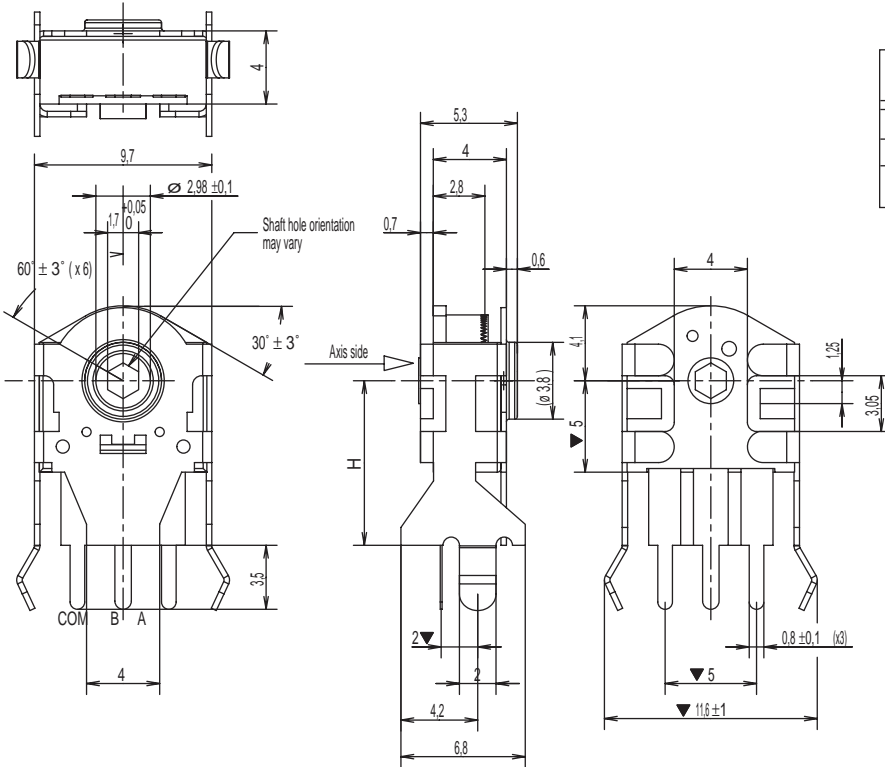
## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.



# NSE10 Series Navigation Switch Encoders

NSE10

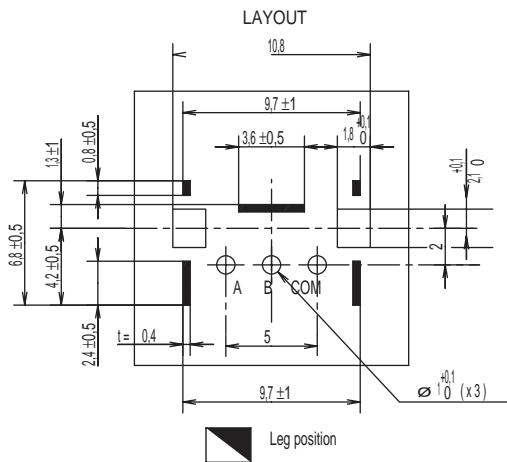


OPTION CODE	AXIS HEIGHT
7	7 mm
9	9 mm
11	11 mm



Navigation

ELECTRICAL GRAPH			
Shaft rotational direction	Signal	Output	
C.W.	A (Terminal A-C)	ON	[Pulse]
		OFF	[Pulse]
	B (Terminal B-C)	ON	[Pulse]
		OFF	[Pulse]



P.C.B. THICKNESS T = 1.6  
View from mounting side

# NSE11 Series Navigation Switch Encoders

## Features/Benefits

- Select switch
- Metallic shaft
- Self clinching terminals
- Positive detent feeling
- Large variety of shaft

## Typical Applications

- Audio / Video equipment
- Navigation systems
- Computer peripherals
- Car radio



## Construction

FUNCTION: Incremental signal + select switch.

CONTACT ARRANGEMENT: Phase difference output of two signal A and B.

TERMINAL: PC pin.

## Mechanical

NUMBER OF DETENT: 20 or 30

DETENT TORQUE: 3 - 20 mN.m

ROTATIONAL ANGLE: 360° endless.

ROTATIONAL LIFE: 15,000 cycles (1 cycle: 360° CW + 360° CCW).

Number of Pulse	Number of Detent	Bracket Spacing	Select Function	Designation
15	30	11 mm	No	NSE11DV57NCF215A
20	20	11 mm	No	NSE11DV57NCF220A
15	30	11 mm	Yes	NSE11DSV57NAF215A
20	20	11 mm	Yes	NSE11DSV57NAF220A
15	30	13,8 mm	Yes	NSE11DSV57NAF215F
20	20	13,8 mm	Yes	NSE11DSV57NAF220F

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

## Electrical

MAXIMUM VOLTAGE: 5 VDC.

MAXIMUM CURRENT DC: 10 mA

MINIMUM CURRENT DC: 1 mA

DIELECTRIC STRENGTH: 300 VAC / 1 mA.

INSULATION RESISTANCE: 100 MΩ min.

BOUNCE TIME: ≤ 2 ms

## Switch Function

CONTACT: SPST

MAXIMUM POWER: 5 VDC 10 mA (min. 1 mA)

CONTACT RESISTANCE: Initial 100mΩ

TRAVEL: 0,5 mm +/- 0,4 mm

OPERATING FORCE: 4,5 +/- 1,5 N

LIFE TIME: 20,000 operations

## Environmental

OPERATING TEMPERATURE: -30°C to +70°C.

STORAGE TEMPERATURE: -40°C to +85°C.

## Process

SOLDERING PROCESS:

Manual soldering 300°C max., 3s max.

Wave soldering 260°C max., 3s max.

No cleaning.



Navigation

## How To Order

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# NSE11 Series Navigation Switch Encoders

NSE11

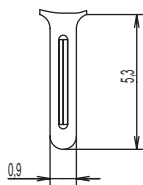


OPTION CODE	LS Length of Shaft	A Push Switch Slot
<b>A</b> - with select	12,5 mm	0,5
<b>C</b> - without select	13 mm	no push switch slot



P.C.B. THICKNESS T = 1,6  
View from mounting side

TERMINAL DETAIL



OPTION CODE	F Bracket Spacing
<b>A</b>	11 mm
<b>F</b>	13,8 mm

15 Pulse

ELECTRICAL GRAPH		
Shaft rotational direction	Signal	Output
C.W.	A (Terminal A-C)	ON OFF
	B (Terminal B-C)	ON OFF

SWITCH GRAPH



20 Pulse

ELECTRICAL GRAPH		
Shaft rotational direction	Signal	Output
C.W.	A (Terminal A-C)	ON OFF
	B (Terminal B-C)	ON OFF

SWITCH GRAPH



# NSE12 Series Navigation Switch Encoders

## Features/Benefits

- Select switch
- Low profile
- Self clinching terminals
- Positive detent feeling

## Typical Applications

- Audio / Video equipment
- Navigation systems
- White goods equipment
- Car radio



## Construction

FUNCTION: Incremental signal + select switch.

CONTACT ARRANGEMENT: Phase difference output of two signal A and B.

TERMINAL: PC pin.

## Mechanical

NUMBER OF DETENT: 12 or 24

DETENT TORQUE: 3 - 20 mN.m

ROTATIONAL ANGLE: 360° endless.

ROTATIONAL LIFE: 30,000 cycles (1 cycle: 360° CW + 360° CCW).

Number of Pulse	Number of Detent	Height	Select Function	Designation
12	12	20 mm	No	NSE12DV1220
24	24	20 mm	No	NSE12DV2420
12	12	25 mm	No	NSE12DV1225
24	24	25 mm	No	NSE12DV2425
12	12	20 mm	Yes	NSE12DSV1220
24	24	20 mm	Yes	NSE12DSV2420
12	12	25 mm	Yes	NSE12DSV1225
24	24	25 mm	Yes	NSE12DSV2425

## Electrical

MAXIMUM VOLTAGE: 5 VDC.

MAXIMUM CURRENT DC: 10 mA

MINIMUM CURRENT DC: 1 mA

DIELECTRIC STRENGTH: 50 VAC / 1 mA.

INSULATION RESISTANCE: 10 MΩ.

BOUNCE TIME: ≤ 2 ms

## Switch Function

CONTACT: SPST

MAXIMUM POWER: 5 VDC - 10 mA (min. 1 mA).

CONTACT RESISTANCE INITIAL: 100 mΩ.

TRAVEL: 0,5 mm +0,2/-0,1 mm

OPERATING FORCE: 4,5 ± 1,5 N.

LIFE TIME: 20,000 operations.

## Environmental

OPERATING TEMPERATURE: -10°C to +70°C.

STORAGE TEMPERATURE: -40°C to +85°C.

## Process

SOLDERING PROCESS:

Manual soldering 300°C max., 3s max.

Wave soldering 260°C max., 3s max.

No cleaning.

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.

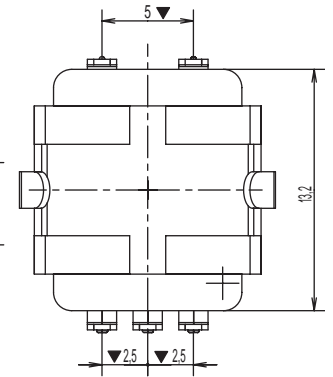


# NSE12 Series Navigation Switch Encoders

## NSE12



OPTION CODE	L TOTAL HEIGHT	H
20	20 mm	7
25	25 mm	12



P.C.B. THICKNESS T = 1.6  
View from mounting side

ELECTRICAL GRAPH		
Shaft rotational direction	Signal	Output
C.W.	A (Terminal A-C)	ON OFF
	B (Terminal B-C)	ON OFF

### SWITCH GRAPH



Navigation

# NSE16 Series Navigation Switch Encoders

## Features/Benefits

- Select switch
- Long life
- Self clinching terminals
- Positive detent feeling

## Typical Applications

- Audio / Video equipment
- White goods equipment



## Construction

FUNCTION: Incremental signal.  
CONTACT ARRANGEMENT: Phase difference output of two signal A and B.  
TERMINAL: PC pin.

## Mechanical

NUMBER OF DETENT: 24  
DETENT TORQUE: 1 - 10 mN.m  
ROTATIONAL ANGLE: 360° endless.  
ROTATIONAL LIFE: 50,000 cycles (1 cycle: 360° CW + 360° CCW).

Number of Pulse	Number of Detent	Height	Select Function	Designation
24	24	26,5 mm	No	NSE16DV2426
24	24	31,5 mm	No	NSE16DV2431

## Electrical

MAXIMUM VOLTAGE: 5 VDC.  
MAXIMUM CURRENT DC: 0,5 mA  
DIELECTRIC STRENGTH: 50 VAC.  
INSULATION RESISTANCE: 10 MΩ.  
BOUNCE TIME: ≤ 2 ms

## Environmental

OPERATING TEMPERATURE: -25°C to +80°C.  
STORAGE TEMPERATURE: -40°C to +85°C.

## Process

SOLDERING PROCESS:  
Manual soldering 300°C max., 3s max.  
Wave soldering 260°C max., 3s max.  
No cleaning.

**NOTE:** Specifications listed above are for switches with standard options.  
For information on specific and custom switches, consult Customer Service Center.

## How To Order

Our easy build-a-switch concept allows you to mix and match options to create the switch you need. To order, select desired option from each category and place it in the appropriate box.



# NSE16 Series Navigation Switch Encoders

## NSE16



OPTION CODE	L TOTAL HEIGHT
<b>26</b>	26,5 mm
<b>31</b>	31,5 mm



P.C.B. THICKNESS T = 1,6  
View from mounting side

ELECTRICAL GRAPH		
Shaft rotational direction	Signal	Output
C.W.	A (Terminal A-C)	ON OFF
	B (Terminal B-C)	ON OFF

SWITCH GRAPH



Navigation